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EXAMINER	
KUMAR, VINOD	
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1638	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/768,886	YANG ET AL.	
	Examiner	Art Unit	
	Vinod Kumar	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/7/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-55* is/are pending in the application.

4a) Of the above claim(s) *11-25, 29-30, 33-34, 37, 39-41, 43, and 45-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-10,26-28,31,32,35,36,38,42,44 and 51-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of objections and rejections

1. Office acknowledges the receipt of Applicant's request for continued examination (RCE) filed on February 7, 2007. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. All previous claim objections and rejections not set forth below have been withdrawn in view of claim amendments. Claims 6-55 are pending. Claims 6-10, 26-28, 31-32, 35-36, 38, 42, 44, and, 51-55 are examined on merits in this Office action.

Election/Restriction

2. Claims 11-25, 29-30, 33-34, 37, 39-41, 43, and 45-50 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 12/05/2005. The restriction was made Final in the Office action mailed on 2/24/2006.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

3. Claims 27-28, and 36 are objected to because of the following informalities:

In claim 27, line 8, and claim 28, line 5, replace "temperatures" with --temperature--.

In claim 28, line 5, replace "temperatures of °C" with --temperature of 4°C--.

In claim 31, lines 6-7 insert --encodes a polypeptide which-- after "ortholog" and before "comprises".

Claim 36 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicants are required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Parent claim 27 or 28 encompasses abiotic stress consisting of temperature of 4°C. Dependent claim 36 fails to limit the parent claim because it encompasses either the abiotic stress of temperature of 4°C or abiotic stress of salinity. Thus claim 36 fails to limit the subject matter of previous claim. Claim 36 fails the infringement test because claim 36 would conceivably be infringed by abiotic stress of salinity which would not infringe claims 27 or 28. See MPEP § 608.01(n).

Appropriate corrections are required.

Claim Rejections-35 USC § 112

4. Claims 27, 31, 35-36, 38, 42 and 44 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly out and distinctly claim the subject matter which applicant regards as the invention.

Claims 27, 31, and 42 are rejected under 35 U.S.C. 112 as being indefinite in their recitation "substantially the amino acid sequence of OsMAP5", which is confusing since "substantially" is a relative term, that has no definite meaning and thus render the claims indefinite. Pages 9-10 of specification gave examples but did not define the recitation. It is unclear what is intended? Dependent claims 35, 36, 38, 44 are also rejected because they fail to overcome this deficiency.

Claim 38 is rejected under 35 U.S.C. 112 as being indefinite in its recitation "said nucleic acid encoding the MAP5 ortholog" because there is improper antecedent basis for this limitation in the claims 27, 28 and 32.

Appropriate corrections are required.

5. Claims 7-8, 26-27, 31, 35-36, 38, 42, 44, and 52-53 remain rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a transgenic plant with increased stress tolerance and a method of producing said transgenic plant comprising over-expression of a rice nucleic acid sequence encoding the polypeptide of SEQ ID NO: 2 (OsMAPK5), does not reasonably provide enablement for (a) any MAPK5 and MAPK5 orthologs, and (b) any host cell (other than bacterial or plant cell) comprising a nucleic acid sequence encoding the polypeptide of SEQ ID NO: 2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims for the reasons of record

stated in Office actions mailed on February 24, 2006, and September 7, 2006. Applicants traverse the rejection in the paper filed on February 27, 2007.

Applicants argue that one skilled in the art would know how to screen for MAPK5 orthologs which are functionally similar to OsMAPK5 wherein the MAPK5 is expressed and possesses kinase activity. Applicants further argue that examples 8.6 and 8.11 provide guidance that OsMAPK5 activity is enhanced by cold temperature of 4 °C and salt treatments, and example 8.3 suggests that only OsMAPK5a possessed kinase activity indicating the importance of missing domain in OsMAPK5b (response, page 14, lines 3-9).

Applicant's arguments were fully considered but were not found to be persuasive. It is maintained that instantly claimed MAPK5 orthologs encompass sequences that may be functionally divergent. As discussed in previous Office actions, Zhang et al. (2001) clearly suggest functional divergence among the members of MAPK gene family. The overexpression or disruption of MAPK gene generate non-specific effects. Furthermore, Applicant's own data clearly suggests that members of MAPK family (e.g. MAPK5b cDNA) may be alternatively spliced to produce product lacking kinase activity. It is maintained that MAPK5 orthologs encompass members of the MAPK family implicated in diverse cell signaling responses. It is important to emphasize that issue is not now to isolate MAPK5 ortholog from different species of *Graminaceae* family. Rather, the issue is how to use said MAPK5 orthologs in a method of improving abiotic stress tolerance based on various factors discussed previously and further outlined as above. In the absence of adequate guidance, it is

maintained that undue experimentation would have been required at the time the claimed invention was made to determine how to use any MAPK5 ortholog of *Graminaceae* family, in a method of improving abiotic stress tolerance, such as increased tolerance at low temperature of 4°C and/or tolerance to salt. See Genentech, Inc. v. Novo Nordisk, A/S, USPQ2d 1001, 1005 (Fed. Cir. 1997), which teaches that "the specification, not the knowledge of one skilled in the art" must supply the enabling aspects of the invention. See also Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016 at page 1027, where it is taught that the disclosure of a few gene sequences did not enable claims broadly drawn to any analog thereof.

Applicants argue that one skilled in the art would be aware of the various techniques available to transform a MAPK5 ortholog into a prokaryotic or eukaryotic host cell (response, page 15, 1st paragraph, lines 1-5).

Applicant's arguments were fully considered but are not found persuasive. It is maintained that issue is not how to transform a host cell with a nucleotide sequence encoding OsMAPK5 (SEQ ID NO: 2). Rather, the issue is how to **use** any host cell transformed with said nucleotide sequence, in a method of producing expected results, such as abiotic stress tolerance in the instant case. Applicants have provided guidance on a method of using a plant cell transformed with said nucleotide sequence. Applicants have also provided guidance on using a bacterial host cell transformed with said nucleotide sequence for cloning purposes. However, one skilled in the art would not know how to use any host cell expressing a nucleic acid sequence encoding SEQ ID NO: 2. For example, one skilled in the art would not know how to use an animal or

insect cell line transformed with said nucleotide sequence. Accordingly, it is maintained that undue experimentation would have been required at the time the claimed invention was made to determine how to use any host (other than bacteria and plant) cell transformed with a nucleotide sequence encoding SEQ ID NO: 2 to practice the claimed invention.

Accordingly, the rejection is maintained.

6. Claims 27, 31, 35, 36, 38, 42 and 44 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for the reasons of record stated in Office action mailed on February 24, 2006, and September 7, 2006. Applicants traverse the rejection in the paper filed on February 27, 2007.

Applicants argue that independent claims 27, 31 and 42 have been amended to recite a MAPK5 ortholog isolated from the *Graminaceae* family wherein the MAPK5 ortholog comprises substantially the amino acid sequence of OsMAPK5, and wherein expression of the MAPK5 ortholog in the plant results in increased tolerance to abiotic stress compared to a wild-type plant wherein the abiotic stress consists of temperature of 4°C (response, page 14, lines 20 through line 3 of page 15).

Applicant's arguments were fully considered but were not found to be persuasive. It is maintained that the specification does not have adequate written description for the genus of MAPK5 orthologs derived from *Graminaceae* family. The

claims encompass a large number undisclosed structures and Applicants have failed to correlate said structures of their broadly claimed genus to the function of abiotic (4°C and/or salt) stress tolerance in a plant. It is maintained that specification does not describe any of these structures (MAPK5 orthologs) and one skilled in the art cannot reliably predict these structures based on the disclosure of SEQ ID NOs: 1 and 2. Furthermore, it is maintained that Applicants have failed to describe conserved functional domains that are shared by these undisclosed structures of Applicant's broadly claimed genus. The specification does not reduce to practice any modification of the sequence of SEQ ID NO: 2. Accordingly, there is lack of adequate description to inform a skilled artisan that applicant was in possession of the claimed invention at the time of filing. See Written Description guidelines published in Federal Register/Vol.66, No. 4/Friday, January 5, 2001/Notices; p. 1099-1111.

The Federal Circuit has recently clarified the application of the written description requirement. The court stated that a written description of an invention "requires a precise definition, such as by structure, formula, [or] chemical name, of the claimed subject matter sufficient to distinguish it from other materials." University of California v. Eli Lilly and Co., 119 F.3d 1559, 1568; 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The court also concluded that "naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." Id. Further, the court held that to adequately describe a claimed genus, Patent Owner must describe a representative number of the species of

the claimed genus, and that one of skill in the art should be able to "visualize or recognize the identity of the members of the genus." Id.

Finally, the court held:

A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus. Id.

See also MPEP Section 2163, page 174 of Chapter 2100 of the August 2005 version, column 1, bottom paragraph, where it is taught that

[T]he claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.

See also Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 18 USPQ 2d 1016 at 1021, (Fed. Cir. 1991) where it is taught that a gene is not reduced to practice until the inventor can define it by "its physical or chemical properties" (e.g. a DNA sequence).

Also see in re Curtis (69 USPQ2d 1274 (Fed. Cir.2004), where the court held that there was sufficient evidence to indicate that one of ordinary skill in the art could not predict the operability of other species other that the single one disclosed in the specification. The court held that a disclosure naming a single species can support a claim to a genus that includes that species if a person of ordinary skill in the art, reading the initial disclosure, would "instantly recall" additional species of the genus already "stored" in the minds, but if other members of the genus would not "naturally

occur" to a person of ordinary skill upon reading the disclosure, then unpredictability in performance " of species other than specifically enumerated defeats claims to the genus.

For at least these reasons and the reasons of record stated in the previous Office Action, the requirement for written description has not been met.

Claim Rejections - 35 USC § 102

7. Claims 6-10, and 51-55 remain and claim 26 is rejected under 35 U.S.C. 102(a) as being anticipated by Wen et al. (Plant Physiol., 129:1880-1891, 2002) for the reasons of record stated in the Office actions mailed on February 24, 2006, and September 7, 2006. Applicants traverse the rejection in the paper filed on February 27, 2007.

Applicants argue that Wen et al. do not disclose an expression vector or a genetically engineered host cell comprising MAPK5 that is operatively associated with a regulatory nucleotide sequence containing transcriptional and translational regulatory information that controls expression of the nucleotide sequence in a host cell wherein MAPK5 is expressed under abiotic stress conditions of 4 °C (response, paragraph bridging pages 15 and 16).

Applicant's arguments were fully considered but were not found to be persuasive. It is maintained that Wen et al. disclose rice *OsMEK1* cDNA encoding a polypeptide OSMEK1 having an amino acid sequence which is identical to the amino acid sequence of instant SEQ ID NO: 2. See Figure 1 and its legend on Page 1882

referring to GenBank Accession No. AF216314. The reference also discloses isolation of a rice *OsMEK1* cDNA clone (same as expression or recombinant vector) isolated from a cDNA expression library, encoding a polypeptide OSMEK1 that is identical in sequence to instant SEQ ID NO: 2. Applicants attention is also drawn to page 129, figure 7 and page 1889, right column, wherein expression of a nucleotide sequence encoding OsMEK1 polypeptide is disclosed using a yeast two-hybrid system. The reference discloses cloning of *OsMEK1* cDNA in a yeast expression vector and wherein said cDNA is operably linked to regulatory nucleotide sequences. The regulatory nucleotide sequences inherently comprise transcriptional and translational regulatory information.

In response to Applicant's argument that amended claims recite abiotic stress of 4 °C, and Wen et al. sequence (OsMEK1) is not expressed under abiotic stress of 4 °C, Applicants must note the following:

(a) Instant claims are directed to expression of a nucleotide sequence encoding SEQ ID NO: 2 in a transgenic environment. This implies that the nucleotide sequence encoding instant SEQ ID NO: 2 is **not** subjected to similar transcriptional regulation as one would expect from its native counterpart present within the plant genome. While the endogenous SEQ ID NO: 2 is expressed under a stress (e.g. low temperature) inducible promoter, the transgenic SEQ ID NO: 2 could be constitutively expressed.

(b) Wen et al. do not disclose transgenic expression of OsMEK1 cDNA would occur only at 12 °C and not at 4 °C.

(c) property of abiotic stress tolerance at a low temperature of 4 °C, or abiotic tolerance to salinity stress is inherent to the polypeptide disclosed in the reference. This inherent property of instant SEQ ID NO: 2 is further evidenced by Applicant's own assertion in Example 10 of specification.

Accordingly, Wen et al. anticipated the claimed invention.

Claim Rejections - 35 USC § 103

8. Claims 26-28, 31-32, 35, 36, 38, 42 and 55 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Wen et al. (Plant Physiol., 129:1880-1891, 2002) in view of Valvekens et al. (PNAS, 85:5536-5540, 1988) for the reasons of record stated in the Office actions mailed on February 24, 2006, and September 7, 2006.

Wen et al. teach a rice *OsMEK1* cDNA encoding a polypeptide OSMEK1 that is identical to instant SEQ ID NO: 2. See Figure 1 legend on Page 1882 referring to GenBank Accession No. AF216314. The reference also teaches isolation of a rice *OsMEK1* cDNA clone (same as expression or recombinant vector) isolated from a cDNA expression library, encoding a polypeptide OSMEK1 that is identical in sequence to instant SEQ ID NO: 2. The expression of a nucleotide sequence encoding OsMEK1 polypeptide using a yeast two-hybrid system is also taught. See in particular, page 129, figure 7 and page 1889, right column, wherein expression of a nucleotide sequence encoding OsMEK1 polypeptide is taught using a yeast two-hybrid

assay. The reference also teaches cloning of *OsMEK1* cDNA in a yeast expression vector and wherein said cDNA is operably linked to regulatory nucleotide sequences.

Wen et al. do not teach a method of producing a transformed plant cell or plant.

Valvekens et al. teach a method of transformation of plant cells, comprising cloning a nucleic acid sequence of interest in a binary vector, transforming said vector into host *Agrobacterium*, introducing of said vector into plant cell through *Agrobacterium* infection comprising said vector, and regeneration of transgenic plants expressing a heterologous protein of interest. See in particular, page 5536, 2nd column through 1st column of page 5537; page 5538, Figures 3 and 4.

It would have been obvious to one of the ordinary skill in the art to express a nucleic acid sequence encoding the polypeptide of Wen et al. in plants, using any appropriate plant transformation method, including the method of transforming a plant cell and regenerating a transgenic plant as taught by Valvekens et al. Given that Wen et al. teach that expression levels of OsMAP1 (100% sequence identity to instant SEQ ID NO: 2) are up-regulated during abiotic stress treatment, one of ordinary skill in the art would have been motivated to express a nucleic acid sequence encoding MAPK5 (SEQ ID NO: 2), in a transgenic plant cell and a transgenic plant, for the purpose of producing an abiotic stress tolerant transgenic plant. It would also have been obvious to produce seeds of the transgenic plant containing the transgene for the purpose of propagation.

In the paper filed on February 27, 2007, Applicants argue that neither Wen et al. nor Valvekens et al., even in combination, suggest or show an appreciation for an

expression vector or genetically engineered host cell or transgenic plant comprising a MAPK5 ortholog operatively associated with a regulatory nucleotide sequence containing transcriptional and translational regulatory information that controls expression of the nucleotide sequence in a host cell wherein the MAPK5 ortholog is expressed under abiotic stress condition of 4 °C. Applicants further argue that nor does Wen et al. or Valvekens et al. suggest a method of increasing abiotic stress in a plant by evaluating the increase or decrease in MAPK5 activity of plants transformed with MAPK5 under abiotic stress conditions of 4 °C. Applicants further argue that there is no motivation by Wen et al. to express a MAPK gene under abiotic conditions of low temperature of 4 °C, because no benefit could be obtained for the purpose of experiments described in Wen et al. Applicants further argue that Wen et al. do not teach that expression of MAPK5 under cold conditions of 4 °C would enhance abiotic tolerance in plants (response, page 16, lines 15 through the end of 2nd paragraph of page 17).

Applicant's arguments were fully considered but are not found persuasive. It is maintained that it would have been obvious to one of the ordinary skill in the art to express Wen et al. nucleic acid sequence encoding OsMAP1 polypeptide in plants, using any appropriate plant transformation method, including the method of transforming a plant cell and regenerating a transgenic plant as taught by Valvekens et al. Given that Wen et al. teach that expression levels of OsMAP1 are up-regulated during abiotic stress treatment, one of ordinary skill in the art would have been motivated to express a nucleic acid sequence encoding MAPK5 (SEQ ID NO: 2), in a

transgenic plant cell and regenerate a transgenic plant thereof, for the purpose of producing an abiotic stress tolerant transgenic plant. It would also have been obvious to produce seeds of the transgenic plant containing the transgene for the purpose of propagation.

It is further maintained that Wen et al. clearly teach abiotic stress tolerant properties of OsMEK1 cDNA encoding a polypeptide which has 100% sequence identity to instant SEQ ID NO: 2. Applicant's attention is specifically drawn to page 1884, right column, 1st paragraph and page 1996, right column, where abiotic stress tolerant properties of OsMEK1 are taught. The reference vividly teaches that OsMEK1 transcripts are induced at variety of different abiotic stresses, such as low temperature, drought and high salt stress conditions. Accordingly Wen et al. provide enough motivation to one of ordinary skill in the art to overexpress OsMEK1 cDNA in a transgenic plant using any plant transformation method including the one taught by Valvekens to produce the abiotic stress tolerant transgenic plant with reasonable expectation of success.

In response to applicant's argument that none of the references teach abiotic tolerance at 4 °C, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instant case, given that Wen et al. clearly teach

abiotic stress properties of OsMAP1 (100% identity to instant SEQ ID NO: 2), and it would have been obvious for one of ordinary skill in the art to express Wen et al. cDNA sequence in a plant to produce an abiotic stress tolerant transgenic plant with reasonable expectation of success. Furthermore, it must be noted that obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Applicants are reminded that while example 10 of the specification clearly suggests that transgenic plants overexpressing instant SEQ ID NO: 2 are tolerant to an abiotic stress tolerance of 4 °C, however, Applicants are reminded that results of Example 10 does **not imply or suggest** that instant SEQ ID NO: 2 would provide abiotic stress tolerance **only** at 4 °C.

For at least these reasons, and reasons of record stated in previous Office actions, it is maintained that the claimed invention as a whole is prima facie obvious over the combined teachings of the prior art.

Summary

9. Claims 6-10, 26-28, 31-32, 35-36, 38, 42, 44, 51, and 52-55 remain rejected.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinod Kumar whose telephone number is (571) 272-4445. The examiner can normally be reached on 8.30 a.m. to 5.00 pm.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PHUONG T. BUI
PRIMARY EXAMINER